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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,897	05/17/2006	Joo-Ho Kim	0001.1059	5791

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STEIN, MCEWEN & BUI, LLP
1400 EYE STREET, NW
SUITE 300
WASHINGTON, DC 20005

EXAMINER	
JOHNSON, CONNIE P	

ART UNIT	PAPER NUMBER
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/531,897	KIM ET AL.	
	Examiner	Art Unit	
	CONNIE P. JOHNSON	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5/17/2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/9/2007,12/20/2007,7/12/2005,4/21/2005,*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Status

1. Claims 1-26 are pending.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 4 recites the limitation "wherein the thermal sensitive material layer is rendered soluble or insoluble in a developing solution when further irradiated by another activation light" in lines 2-3 of claim 4. There is insufficient antecedent basis for this limitation in the claim. Applicant has not claimed that the thermal sensitive material layer is irradiated by activation light prior to claim 4, however claim 4 recites that the thermal sensitive material layer is further irradiated by another activation light.

4. Claims 4 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The "other activation light irradiation" is not disclosed in the claims. Further, applicant has not claimed any particular activation light irradiation. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-6, 9-13, 20-23 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Moritani et al., WO99/14764 with the English translation from U.S. Patent No. 6,411,591 B1.

Moritani teaches an optical recording medium comprising multiple layers as in figure 2. Applicant discloses a composition comprising a first light-to-heat converting layer, a protective layer, thermosensitive layer, protective layer, second light-to-heat converting layer, cap layer and a substrate. Moritani teaches a composition comprising a multilayered structure including a UV setting resin layer-8 (first light-to-heat converting layer), protective layer-6, recording film-5 (thermal sensitive layer), protective layer-4, masking layer-3 (second light-to-heat converting layer), protective layer-2 (cap layer) and a substrate-1 (figure 2). The protective layer-2 comprises dielectric materials and therefore meets the limitations of a cap layer (page 7, line 13). The recording film (thermal sensitive layer) comprises Ge-Sb-Te alloys as in claim 3 (page 7, lines 19-21). Since the masking layer-3 comprises material that is capable of converting light to heat, the masking layer-3 would absorb radiation and convert the absorbed activation light into heat (page 4, lines 21-25). The recitation, “wherein the thermal sensitive material layer is rendered soluble or insoluble in a developing solution when further irradiated by another activation light” is a process limitation and therefore has no patentable weight. Further, the recitation in claim 5, “after heat is generated in the first and second light-to-

heat converting layers by activation light irradiation, is no longer rendered soluble in the developing solution when further irradiated by the other activation light" is a process limitation and therefore has no patentable weight. The recitation in claim 22, "wherein the thermal sensitive material layer changes properties due to heating or activation light irradiation, allowing a pattern to appear through a development process," claim 23 "wherein at least two surfaces of the thermal sensitive material layer are heated, enabling a high aspect ratio pattern to be formed" and claim 26, "wherein the photo and thermal sensitive layer is subjected to activation light irradiation, forming a fine pattern…" are process limitations and therefore have no patentable weight. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted) (MPEP 2113). Since the recording layer is imagewise exposed to laser light, the recording layer undergoes property changes due to heating or activation light.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 7, 8, 14, 15, 16, 17, 18, 19 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moritani et al., WO99/14764 with the English translation from U.S. Patent No. 6,411,591 B1 in view of Dentinger et al., 2002/0122918 A1.

Moritani teaches an optical recording medium comprising multiple layers. Moritani also teaches a composition comprising a multilayered structure including a UV setting resin layer-8 (first light-to-heat converting layer), protective layer-6, recording film-5 (thermal sensitive layer), protective layer-4, masking layer-3 (second light-to-heat converting layer), protective layer-2 (cap layer) and a substrate-1 (figure 2). The protective layer-2 comprises dielectric materials and therefore meets the limitations of a cap layer as relied upon above. Moritani does not teach a method for forming a pattern.

However, Dentinger teaches a method of forming a pattern on a microstructure. Dentinger teaches that the microstructure comprises a first photodefinable composition that is imagewise exposed with a first wavelength. Then, a second photodefinable composition is imagewise exposed with a second wavelength. A portion of each layer is removed to form a pattern (page 3, [0029]). The patterning method is used for positive and negative resist compositions to form compositions and/or components with high aspect ratios (page 4, [0029]). After exposure, the resist is developed to remove the irradiated or unirradiated areas (page 6, [0041]). It would have been obvious to one of ordinary skill in the art to use the method of Dentinger in Moritani because Moritani also teaches exposing a multilayered microstructure to more than one actinic radiation to

improve the numerical aperature of the composition and/or components (col. 5, lines 42-45).

9. Claims 15 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moritani et al., WO99/14764 with the English translation from U.S. Patent No. 6,411,591 B1 in view of Dentinger et al., 2002/0122918 A1 and further in view of Kouchiyama et al., Storage Technology Laboratories.

Moritani teaches an optical recording medium comprising multiple layers. Moritani also teaches a composition comprising a multilayered structure including a UV setting resin layer-8 (first light-to-heat converting layer), protective layer-6, recording film-5 (thermal sensitive layer), protective layer-4, masking layer-3 (second light-to-heat converting layer), protective layer-2 (cap layer) and a substrate-1 (figure 2). The protective layer-2 comprises dielectric materials and therefore meets the limitations of a cap layer as relied upon above. Moritani does not teach that the first activation light is blue light.

However, Kouchiyama teaches photoresists for optical recording medium. The photoresist composition is sputtered onto a substrate and imagewise exposed just as in the Moritani reference. Kouchiyama also teaches that the photoresist composition is exposed with blue light at wavelengths of 405 to 680nm with numerical aperatures of 0.55 to 0.95 (page 769, paragraphs 2-4). Moritani teaches using a laser light with a wavelength range of 350 to 800nm with a numerical aperature (N/A) of 0.5 to 0.7 (col. 5, lines 43-56). Therefore, it would have been obvious to one of ordinary skill in the art to

use the blue laser of Kouchiyama in the method of Moritani because Moritani teaches exposing an inorganic thermal layer to laser light in the range of 350 to 800nm with an NA value of 0.5 to 0.7, which is consistant with the blue light of Kouchiyama.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CONNIE P. JOHNSON whose telephone number is (571)272-7758. The examiner can normally be reached on 7:30am-4:00pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Connie P. Johnson
Examiner
Art Unit 1795

/Cynthia H Kelly/
Supervisory Patent Examiner, Art Unit 1795